Model Case:
Using the NRF in Clinical Practice

Model Case 2 & 3:
Using the NRF in Clinical Practice

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Outline

• Review of NRF’s Three Steps and Application to Anthony & Erika
• A Cultural Competence Lens for the NRF
• The Macro Level of Anthony & Erika
  – What happened to them?
• Processing Step #1 and Step #2 in small groups and large group
• Model Case #3, Enacting Procedural Memories Through Play (Relevance)
  – NRF Guiding Principles Review
Val and I would like to know:

What are your Critical Questions that you need to know in order to proceed with your learning process through the day?

3 Key Concepts

- Toxic stress disrupts early brain networks
- Relational “serve and return” process builds strong circuits
- Brain architecture is built upon lived experiences

3 Key Steps

- #1 Reduce/eliminate toxic stress in relationships (roots)
- #2 Improve the quality of engagement (trunk)
- #3 Support individual differences & remediation of brain networks (branches)
Questions #1 & 2

- Sensory preferences contribute to calming, alerting, soothing, and down-regulating to sleep. (this score went up)

- Sensory triggers are modalities that lead to stress responses, including both over- and under-arousal. (this score went up)
Question #3,4,5

Please match the following terms with the best clinical example.

- Infant needs tight swaddling (proprioception) to calm and fall asleep
  Intensity *(score down)*

- Mom quickly bouncing baby up and down (vestibular) to get him to the green zone
  Rhythm *(score down quite a bit!)*

- Dad play-wrestling with toddler on the floor for 40 minutes before bed-time in order to transitions to sleep *(score up, slightly)*
  Duration

Question #6

When working bottom-up for arousal regulation, the brain system most used is the:

- Regulation system
- Sensory system (*)
- Relevance system
- Executive system

(did not change at all; only 27% got this right)
Question #7

A three year old is having speech delays; they get enrolled in a speech and language enriched class through the school district. According to the NRF, which one of these would be starting assessment at the earliest point in the breakdown?

- a. Assessing for how many words the child speaks (expressive), how many words the child understands (receptive), and articulation issues
- b. Assessing for environmental and relational factors including dual language spoken in the home, presence of sibling, and how often they are read to
- c. Assessing that hearing is adequate, if there is a history of ear infections, and whether eye contact and emotional cue reading are present

This score went down 10% on the Post (from 82 to 73%)

Confidentiality Pledge

- We are honored to share a family’s struggles
- We respect the journey
- We commit to keeping privacy to this day, in this room, for these families
- We use the descriptive terms such as “the baby in the Blue Zone and the toddler in the Red Zone” to keep a collegial conversation alive
How would you organize this list of symptoms & diagnoses?

**Symptoms**
- Lack of joyful exchanges
- Poor head control
- No eye contact
- Limited cooing
- Chronic avoidance/aversion to sensory input
- Primary blue zone state
- No signs of learning
- Sleeping too much
- Lack of orienting to sights and sounds
- Lack of engagement
- Lack of movement of reaching, rolling, turning eyes or head
- Chase and dodge relational pattern

**Diagnoses**
- Relationship Disorder
- R/O Mood Disorder
- Trauma
- Regulatory Disorder
- Speech Delay
- Motor Delay

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**Four Brain Systems: Macro Level**

*Child Welfare*

EXECUTIVE

REGULATION

SENSORY

RELEVANCE

Early Care & Education

Basic Needs/ Medical

Developmental Disabilities

Lillas & Turnbull, 2009
What does “load” look like in the context of challenge or threat at 4 months?

- **Regulation:**
  - Sleeping too much
  - Glazed eyes, hypoalert state
  - No signs of learning (executive, too)

- **Sensory:**
  - Non-responsive to sensory information
  - Chronic avoidance/aversion to sensory input (modulation)
  - Lack of orienting to sights and sounds (processing)
  - Limited cooing, no babbling (speech delay)

- **Relevance:**
  - Lack of engagement
  - Lack of joyful exchanges (facilitates a ‘weak’ commitment)
  - Lack of back and forth relational rhythm (chase and dodge pattern)

- **Executive:**
  - Lack of head stability
  - Lack of movement of reaching, rolling, turning eyes or head to sights and sounds
  - No signs of learning
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Matching or Countering the Sensory Modality

<table>
<thead>
<tr>
<th>Low Intensity, Slow Rhythm</th>
<th>High Intensity, Fast Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Match</strong></td>
<td><strong>Match</strong></td>
</tr>
<tr>
<td>Lower lights and sounds</td>
<td>Increase lights and sounds</td>
</tr>
<tr>
<td>Lower tone of voice</td>
<td>High pitched tone of voice</td>
</tr>
<tr>
<td>Slow down vocal rhythm</td>
<td>Rapid vocal rhythms</td>
</tr>
<tr>
<td>Slow down facial expression</td>
<td>Bright facial expressions</td>
</tr>
<tr>
<td>Slow movement</td>
<td>Fast movement</td>
</tr>
<tr>
<td><strong>Counter</strong></td>
<td><strong>Counter</strong></td>
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Anthony and Erika from Load to Coordination

- **Regulation:**
  - Optimal state of arousal – calm and attentive
  - Bright shiny eyes
  - Signs of learning and relating
- **Sensory:**
  - Tolerating sensations
  - Orienting to sounds, sights, and touch
  - Cooing begun; sign of beginning speech & language
- **Relevance:**
  - Mutual pleasure and joy
  - Back and forth rhythm
  - Falling in love facilitating a strong commitment and increases chances of permanency and a nurturing relationship
- **Executive:**
  - Motor system at midline
  - Motor movement increased with looking, reaching, and kissing
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Joy Lights up the Tree!

Old System

- Foster/Adopt Parent
- Baby
- Birth Parent

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**NRF Guiding Principles**

- **During assessment in Step #1, map out the Duration, Intensity, and Rhythm (DIR) of the stress zones during the awake cycle.** This establishes your baseline so that you know if you are making any progress or not. Revisit your baseline parameters at least every three months.

- **Always start at the earliest point in the breakdown.** If sleep is disrupted, begin with addressing this aspect. If green zone is disrupted, begin with this goal as well. This principle applies to all three steps. Step #1 is the First Level of Engagement and the First Brain System, Regulation.
NRF Guiding Principles

- In the regulation system guiding priorities are intervention for sleep, feeding, and other physical health issues that must be addressed while moving forward.

NRF Guiding Principles

- When working “bottom-up” for zone (arousal) regulation begin with finding the child’s individual sensory preferences and triggers.

- For treatment, match the sensory preference with the Duration, Intensity, and Rhythm (DIR) for the child’s nervous system that promotes sleep, the green zone, and stress recovery.
NRF Guiding Principles

- **Sensory thresholds vary with each child and with each context.** Matching or countering the child’s zones of arousal are guided over time, with experimentation, and by watching the effect on the child’s ability to regulate to sleep and to the green zone.

- The child’s arousal patterns and procedural history are your guide, not the particular “treatment” or EBT you are using. **Individual neurodevelopment that is trauma informed trumps the EBT. Practice flexibility with stability.**

- **Change does not occur in a straight line. Always leave the door open for a family to return to you.**

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**Working with Procedural Trauma from a Bottom-up Perspective**

![Diagram of Top-Down and Bottom-Up perspectives in the context of trauma regulation and responses.](image)

**Top-Down**
- Purposeful activation-inhibition
- Cognitive abilities
- Meanings Relationships
- Inhibition Goals

**Bottom-Up**
- Stress Responses
- Preferences
- Triggers
- Motor programs
- Default modes
- Mood
- Procedural Memories
- Executive
- Sensory
- Relevance

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### Step 2: Levels of Engagement

#### PARENT-CHILD RELATIONSHIP MILESTONES

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Child</th>
<th>Caregiver</th>
<th>Examiner</th>
<th>Date</th>
<th>Diagnosis</th>
</tr>
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<tr>
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#### Functional Capacities

- **TOP-DOWN**
  - When reading cues to share feelings with a through pretend play or by talking (by 2 to 3 years)
  - When sharing joy & good and read internal emotional & gestures (by 3 to 4 years)
- **BOTTOM-UP**
  - When calms, able to eye contact & look at together
  - When sharing joy to create a continuous and forth flow of communication (circle)

*DIR® Institute adapted from the DMIC, ICDL Press

Original functional levels from ICDL’s FEDL; adapted language & organization by Connie Lillas
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Relevance System
Capacity 1, 2, & 3

Relevance System
Capacity One...

Range of emotions

Positive valence

Modulated to context

Negative valence

Full range of Pos/Neg feelings

Healthy pos/neg appraisals

Full range of Pos/Neg memories

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Model Case: Using the NRF in Clinical Practice

Colored Zones are the background to Emotional Regulation

Relevance System Capacity Two...

Range of memories = Modulated to context

Positive valence

Negative valence
Model Case:
Using the NRF in Clinical Practice

Joseph LeDoux, *The Emotional Brain*

Relevance System Capacity Three...

**Accurate meanings**

\[ \text{Accurate meanings} = \text{Positive valence} \oplus \text{Negative valence} \]

For self & others
NRF Guiding Play Principles

- Always work with developmental age, not the chronological age
- When moving up the developmental ladder, consider procedural enactments as part of the emergence of emotional memories that are not always symbolized through symbolic play or with a verbal narrative
- “Pretend” play can hold procedural memories that are not yet verbalized into a “verbal narrative” yet embody a “body narrative”

NRF Guiding Play Principles

- Procedural memories that are not yet verbalized can help us understand traumatic memories that are lodged in the body
- These are now “sensory fragments” (this is what memories are) lodged in the “relevance” system that shape our meaning-making experiences
- While useful, one does not always have to “know” the history of the child to work with the child. “The brain is a historical organ.” (B Perry)
**NRF Guiding Play Principles**

- While following the child’s lead and their interests, in general, work with expanding their emotional range from the constrictions they have
- Use the color wheel to see how expansive or how constricted their emotional range is, linked with colored zones
- With trauma link the aggressor with the victim (old) with a protector (new)
- Many times young children take on the role of the aggressor (red zone) as a “one size fits all”

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**Case Study Timeline: Kai**

<table>
<thead>
<tr>
<th>Removed from home(lessness)</th>
<th>At 15 months</th>
<th>Severe abuse &amp; Neglect</th>
</tr>
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<tbody>
<tr>
<td>Placed in foster home</td>
<td>From 15 to 34 months</td>
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<td>Recovery Resources Begin</td>
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<td>~37 to 38 months</td>
<td>Advent of Reunification Weekends</td>
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<tr>
<td>Adoption</td>
<td>At 42 months</td>
<td>Treatment</td>
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</table>
Adverse Childhood Experiences Scale

CA's ACE List

**What we knew at the start...**

1. Recurrent physical abuse
2. Recurrent emotional abuse
3. Contact sexual abuse
4. An alcohol and/or drug abuser in the household
5. An incarcerated household member
6. Someone who is chronically depressed, mentally ill, institutionalized, or suicidal
7. Violence between adults in the home
8. Parental separation or divorce
9. Emotional or physical neglect

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**“Macro” Level Overview- CASE STUDY (KAI)**

Fost-adopt parents informed of Kai’s Profile

<table>
<thead>
<tr>
<th>Category</th>
<th>Issues/Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation: Bodily/Medical Needs</td>
<td>“Refusal” to toilet train, Chronic diarrhea</td>
</tr>
<tr>
<td>Sensory: Developmental Needs</td>
<td>Dx with severe developmental &amp; speech delays</td>
</tr>
<tr>
<td>Relevance: Mental Health Needs</td>
<td>Frequent crying &amp; aggression; “Resistant” to parental boundaries; Dx with Reactive Attachment Disorder</td>
</tr>
<tr>
<td>Executive: Learning &amp; Educational Needs</td>
<td>Dx with Intellectual Disability (previously referred to as Mental Retardation)</td>
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Four Brain Systems:
Macro & Micro Levels

Early Care & Education

EXECUTIVE
• Motor planning
• Plan & sequence
• Theory of mind
• Language

REGULATION
• Nutrition
• Sleep/awake cycle
• Stress & Stress Recovery

SENSORY
• Sensations
• Processing & Modulation
• Speech

Child Welfare

Mental Health

Basic Needs/ Medical

Developmental Disabilities

Lillas & Turnbull, 2009

“Micro” Level Overview- CASE STUDY (KAI)
Observations When He Arrives to Post-Adopt Home

• Regulation: Balance of 24-hour Sleep/Awake Arousal
• Disrupted sleep/awake cycles
• Hoarding food underneath his bed

• Sensory: Balance of Processing & Modulation of Sensations
• Babbling; appears to understand words spoken to him
• Appears easily overstimulated with people and toys
• No registration of pain

• Relevance: Balance of pos/neg Emotions, Memories, & Meanings
• Hyperexcited with “company”; running around to everyone frenetically
• Screaming when limits are set

• Executive: Balance of initiating and sustaining thoughts, behaviors, & actions
• Hyperexcited with toys; aimlessly running from toy to toy without purposeful behavioral initiation
CASE STUDY
Triggers & Recovery Resources for Kai

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Regulation System
-Triggers

**Behaviors Observed**
- Chronic awake dysregulation
- Chronic sleep dysregulation
- Hoarding food

**Possible Underlying Explanations**
- No procedural memories of comfort or getting to green zone
- No procedural memories of co-regulation for sleep
- Procedural memories of neglect, hunger
### Sensory System

**-Triggers (with some resilience)**

<table>
<thead>
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<th>Possible Underlying Explanations</th>
</tr>
</thead>
</table>
| Appears easily overstimulated with people and toys | • Possibly gone from an understimulating – custodial care environment (last foster home) to now an overstimulating environment (too many toys, too many people)  
• Modulation difficulties |
| Babbling; appears to understand words spoken to him | • Speech delay but beginning to vocalize at 6 to 9 month level  
• Appears to have receptive language skills and to process information |

### Relevance System

**-Triggers**

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<thead>
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<td>Hyperexcited with “company”; running around to everyone frenetically</td>
<td>• Poor or no procedural memories of connecting to safe person(s) for source of comfort &amp; joy</td>
</tr>
<tr>
<td>Screaming when limits are set</td>
<td>• Both hyperexcitement and rage aspect of disinhibited type of RAD</td>
</tr>
</tbody>
</table>
### Executive System - Triggers

**Behaviors Observed**

- Hyperexcited with toys; aimlessly running from toy to toy without purposeful behavioral initiation

**Possible Underlying Explanations**

- Poor or no procedural memories of sequence & structure
- Poor or no procedural memories of engagement

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### Regulation System - Recovery Resources

**Behaviors Observed**

- Chronic awake dysregulation
- Chronic sleep dysregulation
- Hoarding food
- Chronic diarrhea

**Resources Attempted / Implemented**

- Searching for ways to soothe and calm
- Sitting next to Kai at night in his bedroom until he falls asleep
- Placing healthy food snacks on bottom shelf in kitchen that Kai can go to and reach on his own 24/7
- Suspected food allergies
**Sensory System**

- **Recovery Resources**

<table>
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<th>Resources Attempted / Implemented</th>
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</table>
| Appears easily overstimulated with people and toys | • Post-adopt Dad took 2 weeks off from work to be home 24/7  
• Immediately stopped having people over  
• Simplified toys into rotating boxes, one per week  
• Superdawg was recognized as comforting, supporting green zone, and facilitating sleep; allowed to sleep with him |
| Babbling; appears to understand words spoken to him | • Parents speaking in shorter sentences  
• With less stimulation, talking begins |

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**Relevance System**

- **Recovery Resources**

<table>
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<th>Behaviors Observed</th>
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| Hyperexcited with “company”; running around to everyone frenetically | • Playing with limited toys with intent to look at each other’s faces and to create joy  
• Playing outside naturally created more opportunities for shared joy; sensory-motor play on slide and swing created more opportunities for facial contact (earlier relational milestones) |
| Screaming when limits are set | • “Toddler-proofed” the house  
• For every “no” there was at least one “yes”  
• Non-negotiable #1s were narrowed to safety and health needs |
### Executive System

#### Executive System - Recovery Resources

<table>
<thead>
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<th>Behaviors Observed</th>
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<tr>
<td>Hyper-excited with toys; aimlessly running from toy to toy without purposeful behavioral initiation</td>
<td>• Visual sequence &amp; structure of the day set up with Velcro strip and pictures</td>
</tr>
<tr>
<td></td>
<td>• By limiting contact to foster-adopt parents, rhythms were set up that included a calming &amp; predictable schedule</td>
</tr>
<tr>
<td></td>
<td>• House “rules” of #1s are in visual view (brushing teeth, holding hand when crossing the street, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Transitions prepared for with visual and auditory prompts; not done abruptly unless necessary</td>
</tr>
</tbody>
</table>

### “Micro” Level Overview

**Within Two to Six Weeks In Foster-Adopt Home**

- **Regulation**: Balance of 24-hour Sleep/Awake Arousal
  - Red & blue zone behaviors decreased
  - Green zone improved
  - Food allergies noted – chronic diarrhea stopped
  - Sleeping alone by end of month

- **Sensory**: Balance of Processing & Modulating Sensations
  - Within two weeks began to talk in one and two word sentences
  - Within one month talking non-stop with articulation problems

- **Relevance**: Balance of pos/neg Valenced Emotions, Memories, & Meanings
  - Sharing joy with foster-adopt parents
  - More cooperative
  - Showing appropriate stranger anxiety around strangers

- **Executive**: Balance of initiating and sustaining thoughts, behaviors, & actions
  - Obvious Kai does not have intellectual disability
  - Responding to predictable schedule

---

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### Case Study Timeline: Kai

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### “Micro” Level Overview

#### After 3 months, Reunification Visits Began/Birth Mom

- **Regulation**: Balance of 24-hour Sleep/Awake Arousal
  - Red zone aggression returned and increased
  - Blue zone staring off into space when awake for long periods
  - Inconsolable and crying at night
  - Diarrhea returned after bio visits
  - With aggression, cussing and swearing
  - Speech returns back to babbling

- **Sensory**: Balance of Processing & Modulation of Sensations
  - Begins to pull out his own eyelashes
  - With reunification visits continuing, he shows distress on the way to the train, asking not to leave
  - Begins to pull out his F mom’s hair and hair off of dolls
  - Hysterically screams when he’s not in control

- **Relevance**: Balance of pos/neg Emotions, Memories, & Meanings

- **Executive**: Balance of initiating and sustaining thoughts, behaviors, & actions

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**NRF Guiding Principles**

When there is a loss of health or developmental gains...

- Whenever possible, recommend a return to the previous conditions of that supported baseline health
- Whatever relationships were promoting baseline health need to be honored
- A collision of safety and threat
- One has to consider that procedural memories are being triggered by the forced reunions with an abusive, neglectful, or terrorizing parent

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**Multiple Dimensions of Trauma**

**Play Themes of the Relevance System**

**Constricted Play Themes**
- No affect
- Only brief positive affect
- Predominance of negative range, with no positive affect
- Predominance of positive range, with no negative affect

**Extreme Play Themes**
- Repeated aggression
- Destructive actions to vulnerable other(s)
- Repeated victimization scenarios
- Destructive behaviors (e.g., head-banging, self-biting, biting others)
- Repeated themes of suspicion and fear

Lillas & Turnbull, © 2009
Case Study Timeline: Kai

- **Removed from home(lessness)**
  - At 15 months: Severe abuse & Neglect

- **Placed in foster home**
  - From 15 to 34 months: Custodial care

- **Placed in fost-adopt home**
  - At 34 months: Recovery Resources Begin

- **Period of Deterioration**
  - ~37 to 38 months: Advent of Reunification Weekends

- **Adoption, Second Period of Deterioration**
  - At 48 months: Pre-school

---

"Micro" Level Overview

**Began Pre-school and 2nd Period of Deterioration**

- **Regulation**: Balance of 24-hour Sleep/Awake Arousal
  - Nightmare of “old daddy” finding him and biting his arm off
  - Loss of bowel/bladder control

- **Sensory**: Balance of Processing & Modulation of Sensations
  - Waking up screaming in pain; rubbing his legs
  - Lots of sensory stimulation at school, 40 students

- **Relevance**: Balance of pos/neg Emotions, Memories, & Meanings
  - Even though liking his teachers, began biting his teachers and friends
  - Worried his “old daddy” would show up at home or school to steal him
  - Considered all of these behaviors as part of procedural memories

- **Executive**: Balance of initiating and sustaining thoughts, behaviors, & actions
  - Developmental school with lots of free choice, lots of stations
Using Bottom Up & Top Down Strategies Along the Four Brain Systems

**Top-Down**

- Purposeful activation-inhibition
- Cognitive processing abilities
- Meanings relationships
- Inhibition goals

**Bottom-Up**

- States of Arousal
- Preferences Triggers
- Mood Procedural Memories
- Motor programs Default mode

**Uses**

**Regulation**

**Sensory**

**Relevance**

**Executive**

Begins with procedurally enacting...

- The role of the aggressor
Beginning to procedurally enact......

- The role of the victim...

Beginning to procedurally enact......

- Spontaneously, the role of the protector...
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Thank You!